

**REMARKS**

Entry of the foregoing, reexamination and reconsideration of the application identified in caption, as amended, pursuant to and consistent with 37 C.F.R. §1.111 and in light of the remarks which follow, are respectfully requested.

By the above amendments, claims 2, 3, 4, 7, 8, 11, 12, 14-16, 18 and 19 have been canceled. Claim 1 has been amended to incorporate the features of now canceled claims 3, 4, 7 and 8. Claim 6 has been amended for readability by reciting the phrase "by either adding water to the organic solvent or adding the organic solvent into water." Claims 9 and 10 have been amended to depend from claim 1. Claims 13, 17 and 20 have been amended to recite "a vinyl polymer having at least one of a carboxyl group and a sulfonic acid group." Support for these amendments can be found in the specification at least at page 6, lines 6-10. Claim 20 has been amended for readability by reciting "preparing an ink for an ink jet."

New claims 21-25 are directed to further aspects of the present invention. Support for these claims can be found in the instant specification at least at page 26, lines 1 and 2, taken in connection with page 27, lines 4-6.

Turning to the Official Action, claim 6 stands rejected under 35 U.S.C. §112, second paragraph, for the reasons set forth at page 2 of the Official Action. In response thereto, claim 6 has been amended to recite the phrase "by either adding water to the organic solvent or adding the organic solvent into water," as suggested by the Examiner. Accordingly, withdrawal of the §112, second paragraph, rejection is respectfully requested.

Claims 1, 15 and 18 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,753,017 (*Onodera et al*). This rejection is moot in light of the cancellation of

claims 15 and 18, and the incorporation of the subject matter of now canceled claims 3, 4, 7 and 8 into claim 1. For example, claims 3, 4, 7 and 8 have not been rejected in view of *Onodera et al.* Accordingly, for at least these reasons, withdrawal of this rejection is respectfully requested.

Claims 1-5, 13, 15, 17, 18 and 20 stand rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,313,196 (*Helling et al.*). This rejection is moot in light of the above amendments. In particular, claims 15 and 18 have been canceled. The subject matter of now canceled claims 7 and 8 has been incorporated into claim 1, claims 7 and 8 having not been rejected in view of *Helling et al.* As well, claims 13, 17 and 20 have been amended to recite the subject matter of claims 7 and 8. Accordingly, for at least these reasons, withdrawal of this rejection is respectfully requested.

Claims 1-3, 5-12, 15, 16 and 19 stand rejected under 35 U.S.C. §103(a) as being obvious over U.S. Patent No. 6,025,412 (*Sacripante et al.*) or U.S. Patent No. 6,031,019 (*Tsutsumi et al.*) either of which in view of Japanese patent document No. 09-059552. This rejection is moot in light of the cancellation of claims 15, 16 and 19, and the incorporation of the subject matter of now canceled claim 4 into claim 1. In this regard, claim 4 has not been rejected in the present rejection. Accordingly, for at least these reasons, withdrawal of this rejection is respectfully requested.

Claims 1-20 stand rejected under 35 U.S.C. §103(a) as being obvious over *Sacripante et al.* or *Tsutsumi et al.* either of which in view of Japanese patent document No. 03-231975 (*JP '975*). This rejection is moot with respect to canceled claims 11, 15, 16, 18 and 19. Withdrawal of this rejection with respect to pending claims 1, 13, 17 and 20 is respectfully requested for at least the following reasons.

The Patent Office has relied on *Sacripante et al* for disclosing, *inter alia*, "an aqueous ink jet ink and method of ink jet printing." In addition, *Tsutsumi et al* has been relied upon for disclosing, *inter alia*, "a water-based ink jet ink and method of ink jet printing." However, *Sacripante et al* and *Tsutsumi et al* fail to disclose or suggest the formula (II) dye recited in claim 1 and the formula (III) dye recited in claims 13, 17 and 20.

*JP '975* fails to cure this deficiency of *Sacripante et al*, at least because *JP '975* and *Sacripante et al* are not properly combinable in the manner set forth in the Official Action. In this regard, *Sacripante et al* discloses that the dye thereof "is chemically attached to the emulsifiable polymer resin, as either a main chain constituent or a side chain constituent, rather than being separately mixed with a polymer resin" (*Sacripante et al* at col. 3, lines 42-45). *Sacripante et al* further discloses that to permit the dye to be chemically attached to the polymer resin, the dye contains two or more hydroxyl, diester or dicarboxylic acid components (*Sacripante et al* at col. 8, lines 15-24).

In stark contrast with *Sacripante et al*, *JP '975* does not appear to disclose or suggest such a dye containing two or more hydroxyl, diester or dicarboxylic acid components which is compatible with the polymer disclosed by *Sacripante et al* to form a chemical attachment therewith. Thus, in light of *Sacripante et al*'s disclosure that the dye is attached to the resin by using two or more hydroxyl, diester or dicarboxylic acid components, one of ordinary skill in the art would not have been motivated to modify *Sacripante et al* by substituting the dye thereof with the *JP '975* dye which does not appear to contain two or more hydroxyl, diester or dicarboxylic acid components.

Furthermore, the inventive inks and coloring compositions defined by claims 1, 13, 17 and 20 contain a vinyl polymer having at least one of a carboxyl group and a sulfonic acid group. While *Sacripante et al* discloses various emulsifiable polymer resins, there is simply no disclosure or suggestion of the claimed vinyl polymer having at least one of a carboxyl group and a sulfonic acid group. Thus, the alleged combination of *Sacripante et al* with *JP '975* does not render *prima facie* obvious the presently claimed invention.

It is submitted that *JP '975* is not properly combinable with *Tsutsumi et al* in the manner set forth in the Official Action. In this regard, *Tsutsumi et al* has no disclosure or suggestion of employing the claimed formula (II) and (III) dyes in the aqueous ink thereof. Rather, *Tsutsumi et al* merely discloses that the colorant employed in the ink thereof is selected from oil-soluble dyes, disperse dyes, direct dyes, acid dyes and basic dyes, as well as pigments (*Tsutsumi et al* at col. 4, lines 20-22).

In light of the above, absent an improper resort to Applicants' own disclosure, one of ordinary skill in the art would not have been motivated to select the *JP '975* dye alleged to correspond to the inventive dyes from the extensive list of dyes disclosed by *JP '975*, and employ same in the polymer emulsion of *Tsutsumi et al*. Moreover, *JP '975* appears to have no mention or suggestion of the benefits of combining the dyes thereof with a polymer. Therefore, for at least the above reasons, one of ordinary skill in the art would not have been motivated to combine *Tsutsumi et al* with *JP '975* in the manner suggested in the Official Action.

In addition, referring to Table 2 at page 141 of the instant specification, the present invention provides inks and coloring compositions which can have excellent color tone, dependency on paper, water resistance and light resistance characteristics. By comparison, the

applied art fails to have any recognition or suggestion that the combination of a vinyl polymer having at least one of a carboxyl group and a sulfonic acid group as an ionic group, with the recited formula (II) or (III) dye, results in inks and coloring compositions with such improved characteristics. Thus, absent an improper resort to Applicants' own disclosure, one of ordinary skill in the art would not have been motivated to modify the applied art to arrive at the presently claimed invention.

For at least the above reasons, it is apparent that no *prima facie* case of obviousness exists. Accordingly, withdrawal of the §103(a) rejection is respectfully requested.

Claims 1, 2, 5-12, 15, 16, 18 and 19 stand rejected under 35 U.S.C. §103(a) as being obvious over *Sacripante et al* or *Tsutsumi et al* either of which in view of Japanese patent document No. 11-349874. This rejection is moot in light of the cancellation of claims 15, 16, 18 and 19, and the incorporation of the subject matter of now canceled claims 3 and 4 into claim 1. In this regard, claims 3 and 4 have not been rejected in the present rejection. Accordingly, for at least these reasons, withdrawal of this rejection is respectfully requested.

From the foregoing, further and favorable action in the form of a Notice of Allowance is believed to be next in order, and such action is earnestly solicited.

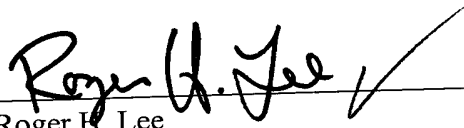
Application No. 09/740,927  
Attorney's Docket No. 003510-069

If there are any questions concerning this paper or the application in general, the Examiner is invited to telephone the undersigned.

Respectfully submitted,

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Date: September 9, 2002

**Attachment to AMENDMENT dated September 9, 2002**

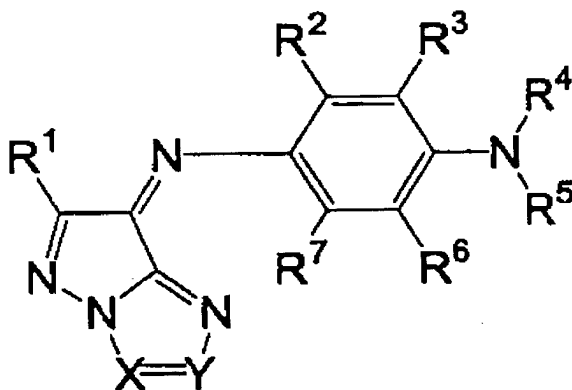
**Marked-up claims 1, 6, 9, 10, 13, 17 and 20**

1. (amended) An ink for ink-jet comprising:

a coloring composition containing coloring particulates dispersed in a water based medium, the coloring particulates containing an oil soluble dye and an oil soluble polymer; and wherein the coloring composition has wavelength of maximum absorption ( $\lambda_{\text{max}}(\text{nm})$ ) in the wavelength range from 510 to 560 nm and when the absorbance at the wavelength of maximum absorption ( $\lambda_{\text{max}}(\text{nm})$ ) is regarded as 1, the absorbance at a wavelength ( $\lambda_{\text{max}} + 75 (\text{nm})$ ) is no more than 0.2 and the absorbance at a wavelength ( $\lambda_{\text{max}} - 75 (\text{nm})$ ) is no more than 0.4, and wherein

the oil soluble dye is represented by the following formula (II):

Formula (II)



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**Marked-up claims 1, 6, 9, 10, 13, 17 and 20**

wherein R<sup>1</sup> represents a hydrogen atom, an aliphatic group, an aromatic group, a heterocyclic group, a cyano group, -OR<sup>11</sup>, -SR<sup>12</sup>, -CO<sub>2</sub>R<sup>13</sup>, -OCOR<sup>14</sup>, -NR<sup>15</sup>R<sup>16</sup>, -CONR<sup>17</sup>R<sup>18</sup>, -SO<sub>2</sub>R<sup>19</sup>, -SO<sub>2</sub>NR<sup>20</sup>R<sup>21</sup>, -NR<sup>22</sup>CONR<sup>23</sup>R<sup>24</sup>, -NR<sup>25</sup>CO<sub>2</sub>R<sup>26</sup>, -COR<sup>27</sup>, -NR<sup>28</sup>COR<sup>29</sup>, or -NR<sup>30</sup>SO<sub>2</sub>R<sup>31</sup>; R<sup>11</sup>, R<sup>12</sup>, R<sup>13</sup>, R<sup>14</sup>, R<sup>15</sup>, R<sup>16</sup>, R<sup>17</sup>, R<sup>18</sup>, R<sup>19</sup>, R<sup>20</sup>, R<sup>21</sup>, R<sup>22</sup>, R<sup>23</sup>, R<sup>24</sup>, R<sup>25</sup>, R<sup>26</sup>, R<sup>27</sup>, R<sup>28</sup>, R<sup>29</sup>, R<sup>30</sup> and R<sup>31</sup> each independently represents a hydrogen atom, an aliphatic group, or an aromatic group;

R<sup>2</sup>, R<sup>3</sup>, R<sup>6</sup> and R<sup>7</sup> each independently represents a hydrogen atom, a halogen atom, an aliphatic group, an aromatic group, a heterocyclic group, a cyano group, -OR<sup>51</sup>, -SR<sup>52</sup>, -CO<sub>2</sub>R<sup>53</sup>, -OCOR<sup>54</sup>, -NR<sup>55</sup>R<sup>56</sup>, -CONR<sup>57</sup>R<sup>58</sup>, -SO<sub>2</sub>R<sup>59</sup>, SO<sub>2</sub>NR<sup>60</sup>R<sup>61</sup>, -NR<sup>62</sup>CONR<sup>63</sup>R<sup>64</sup>, -NR<sup>65</sup>CO<sub>2</sub>R<sup>66</sup>, -COR<sup>67</sup>, -NR<sup>68</sup>COR<sup>69</sup> or -NR<sup>70</sup>SO<sub>2</sub>R<sup>71</sup>; R<sup>51</sup>, R<sup>52</sup>, R<sup>53</sup>, R<sup>54</sup>, R<sup>55</sup>, R<sup>56</sup>, R<sup>57</sup>, R<sup>58</sup>, R<sup>59</sup>, R<sup>60</sup>, R<sup>61</sup>, R<sup>62</sup>, R<sup>63</sup>, R<sup>64</sup>, R<sup>65</sup>, R<sup>66</sup>, R<sup>67</sup>, R<sup>68</sup>, R<sup>69</sup>, R<sup>70</sup> and R<sup>71</sup> each independently represents a hydrogen atom, an aliphatic group or an aromatic group;

R<sup>4</sup> and R<sup>5</sup> each independently represents a hydrogen atom, an aliphatic group, an aromatic group, or a heterocyclic group; and wherein

X represents -N=, and Y represents -C(R<sup>8</sup>)=, and wherein

the oil soluble polymer is a vinyl polymer having at least one of a carboxyl group and a sulfonic acid group as an ionic group.

6. (amended) The ink for ink-jet according to claim 1, wherein the coloring particulates are obtained by emulsifying and making into fine particles an organic solvent which includes the oil soluble polymer and the oil soluble dye, by [one of] either adding water to the organic solvent[, and] or adding the organic solvent into water.



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**Marked-up claims 1, 6, 9, 10, 13, 17 and 20**

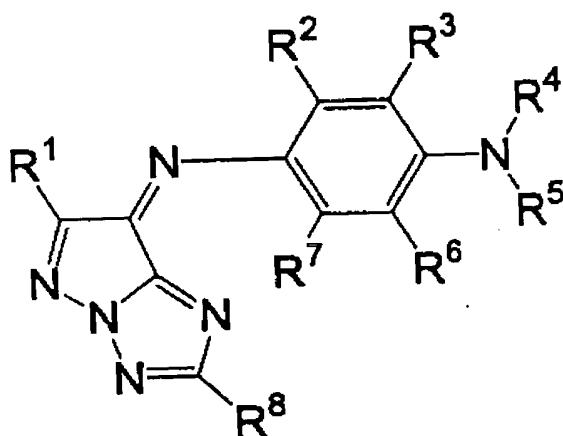
9. (amended) The ink for ink-jet according to claim 1, [8,] wherein the ionic group of the vinyl polymer is a carboxyl group.

10. (amended) The ink for ink-jet according to claim 1, [7,] wherein the vinyl polymer has ionic groups in an amount of from 0.1 to 3.0 mmol/g.

13. (amended) An ink for ink-jet comprising:

a coloring composition dispersed in a water based medium, containing coloring particulates containing an oil soluble dye represented by the following formula (III) and [an oil soluble polymer] a vinyl polymer having at least one of a carboxyl group and a sulfonic acid group:

Formula (III)



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**Marked-up claims 1, 6, 9, 10, 13, 17 and 20**

wherein R<sup>1</sup> represents a hydrogen atom, an aliphatic group, an aromatic group, a heterocyclic group, a cyano group, -OR<sup>11</sup>, -SR<sup>12</sup>, -CO<sub>2</sub>R<sup>13</sup>, -OCOR<sup>14</sup>, -NR<sup>15</sup>R<sup>16</sup>, -CONR<sup>17</sup>R<sup>18</sup>, -SO<sub>2</sub>R<sup>19</sup>, -SO<sub>2</sub>NR<sup>20</sup>R<sup>21</sup>, -NR<sup>22</sup>CONR<sup>23</sup>R<sup>24</sup>, -NR<sup>25</sup>CO<sub>2</sub>R<sup>26</sup>, -COR<sup>27</sup>, -NR<sup>28</sup>COR<sup>29</sup>, or -NR<sup>30</sup>SO<sub>2</sub>R<sup>31</sup>; and R<sup>11</sup>, R<sup>12</sup>, R<sup>13</sup>, R<sup>14</sup>, R<sup>15</sup>, R<sup>16</sup>, R<sup>17</sup>, R<sup>18</sup>, R<sup>19</sup>, R<sup>20</sup>, R<sup>21</sup>, R<sup>22</sup>, R<sup>23</sup>, R<sup>24</sup>, R<sup>25</sup>, R<sup>26</sup>, R<sup>27</sup>, R<sup>28</sup>, R<sup>29</sup>, R<sup>30</sup> and R<sup>31</sup> each independently represents a hydrogen atom, an aliphatic group, or an aromatic group;

R<sup>2</sup>, R<sup>3</sup>, R<sup>6</sup> and R<sup>7</sup> each independently represents a hydrogen atom, a halogen atom, an aliphatic group, an aromatic group, a heterocyclic group, a cyano group, -OR<sup>51</sup>, -SR<sup>52</sup>, -CO<sub>2</sub>R<sup>53</sup>, -OCOR<sup>54</sup>, -NR<sup>55</sup>R<sup>56</sup>, -CONR<sup>57</sup>R<sup>58</sup>, -SO<sub>2</sub>R<sup>59</sup>, SO<sub>2</sub>NR<sup>60</sup>R<sup>61</sup>, -NR<sup>62</sup>CONR<sup>63</sup>R<sup>64</sup>, -NR<sup>65</sup>CO<sub>2</sub>R<sup>66</sup>, -COR<sup>67</sup>, -NR<sup>68</sup>COR<sup>69</sup> or -NR<sup>70</sup>SO<sub>2</sub>R<sup>71</sup>; R<sup>51</sup>, R<sup>52</sup>, R<sup>53</sup>, R<sup>54</sup>, R<sup>55</sup>, R<sup>56</sup>, R<sup>57</sup>, R<sup>58</sup>, R<sup>59</sup>, R<sup>60</sup>, R<sup>61</sup>, R<sup>62</sup>, R<sup>63</sup>, R<sup>64</sup>, R<sup>65</sup>, R<sup>66</sup>, R<sup>67</sup>, R<sup>68</sup>, R<sup>69</sup>, R<sup>70</sup> and R<sup>71</sup> each independently represents a hydrogen atom, an aliphatic group or an aromatic group;

R<sup>4</sup> and R<sup>5</sup> each independently represents a hydrogen atom, an aliphatic group, an aromatic group or a heterocyclic ring; and

R<sup>8</sup> represents a hydrogen atom, an aliphatic group or an aromatic group.

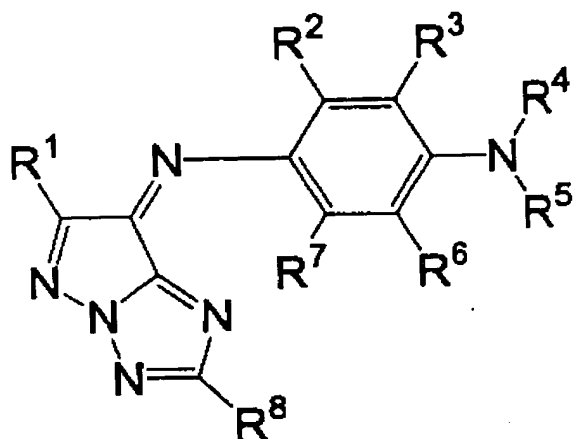
17. (amended) A coloring composition comprising:

coloring particulates containing an oil soluble dye represented by the following formula (III) and [an oil soluble polymer,] a vinyl polymer having at least one of a carboxyl group and a sulfonic acid group, said coloring particulates being dispersed in an aqueous medium:

Formula (III)

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Marked-up claims 1, 6, 9, 10, 13, 17 and 20



wherein R<sup>1</sup> represents a hydrogen atom, an aliphatic group, an aromatic group, a heterocyclic group, a cyano group, -OR<sup>11</sup>, -SR<sup>12</sup>, -CO<sub>2</sub>R<sup>13</sup>, -OCOR<sup>14</sup>, -NR<sup>15</sup>R<sup>16</sup>, -CONR<sup>17</sup>R<sup>18</sup>, -SO<sub>2</sub>R<sup>19</sup>, -SO<sub>2</sub>NR<sup>20</sup>R<sup>21</sup>, -NR<sup>22</sup>CONR<sup>23</sup>R<sup>24</sup>, -NR<sup>25</sup>CO<sub>2</sub>R<sup>26</sup>, -COR<sup>27</sup>, -NR<sup>28</sup>COR<sup>29</sup>, or -NR<sup>30</sup>SO<sub>2</sub>R<sup>31</sup>; and R<sup>11</sup>, R<sup>12</sup>, R<sup>13</sup>, R<sup>14</sup>, R<sup>15</sup>, R<sup>16</sup>, R<sup>17</sup>, R<sup>18</sup>, R<sup>19</sup>, R<sup>20</sup>, R<sup>21</sup>, R<sup>22</sup>, R<sup>23</sup>, R<sup>24</sup>, R<sup>25</sup>, R<sup>26</sup>, R<sup>27</sup>, R<sup>28</sup>, R<sup>29</sup>, R<sup>30</sup> and R<sup>31</sup> each independently represents a hydrogen atom, an aliphatic group, or an aromatic group;

R<sup>2</sup>, R<sup>3</sup>, R<sup>6</sup> and R<sup>7</sup> each independently represents a hydrogen atom, a halogen atom, an aliphatic group, an aromatic group, a heterocyclic group, a cyano group, -OR<sup>51</sup>, -SR<sup>52</sup>, -CO<sub>2</sub>R<sup>53</sup>,

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**Marked-up claims 1, 6, 9, 10, 13, 17 and 20**

$-\text{OCOR}^{54}$ ,  $-\text{NR}^{55}\text{R}^{56}$ ,  $-\text{CONR}^{57}\text{R}^{58}$ ,  $-\text{SO}_2\text{R}^{59}$ ,  $\text{SO}_2\text{NR}^{60}\text{R}^{61}$ ,  $-\text{NR}^{62}\text{CONR}^{63}\text{R}^{64}$ ,  $-\text{NR}^{65}\text{CO}_2\text{R}^{66}$ ,  
 $-\text{COR}^{67}$ ,  $-\text{NR}^{68}\text{COR}^{69}$  or  $-\text{NR}^{70}\text{SO}_2\text{R}^{71}$ ;  $\text{R}^{51}$ ,  $\text{R}^{52}$ ,  $\text{R}^{53}$ ,  $\text{R}^{54}$ ,  $\text{R}^{55}$ ,  $\text{R}^{56}$ ,  $\text{R}^{57}$ ,  $\text{R}^{58}$ ,  $\text{R}^{59}$ ,  $\text{R}^{60}$ ,  $\text{R}^{61}$ ,  $\text{R}^{62}$ ,  $\text{R}^{63}$ ,  
 $\text{R}^{64}$ ,  $\text{R}^{65}$ ,  $\text{R}^{66}$ ,  $\text{R}^{67}$ ,  $\text{R}^{68}$ ,  $\text{R}^{69}$ ,  $\text{R}^{70}$  and  $\text{R}^{71}$  each independently represents a hydrogen atom, an  
aliphatic group or an aromatic group;

$\text{R}^4$  and  $\text{R}^5$  each independently represents a hydrogen atom, an aliphatic group, an aromatic  
group or a heterocyclic ring; and

$\text{R}^8$  represents a hydrogen atom, an aliphatic group or an aromatic group.

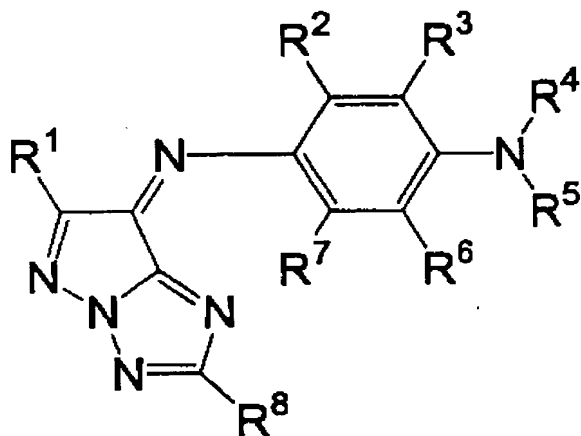
20. (amended) An ink-jet printing process comprising:

(a) preparing an ink for an ink jet, containing coloring composition in which coloring  
particulates contain an oil soluble dye represented by the following formula (III) and [an oil  
soluble polymer,] a vinyl polymer having at least one of a carboxyl group and a sulfonic acid  
group, said coloring particulates being dispersed in an aqueous medium,

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**Marked-up claims 1, 6, 9, 10, 13, 17 and 20**

Formula (III)



wherein R<sup>1</sup> represents a hydrogen atom, an aliphatic group, an aromatic group, a heterocyclic group, a cyano group, -OR<sup>11</sup>, -SR<sup>12</sup>, -CO<sub>2</sub>R<sup>13</sup>, -OCOR<sup>14</sup>, -NR<sup>15</sup>R<sup>16</sup>, -CONR<sup>17</sup>R<sup>18</sup>, SO<sub>2</sub>R<sup>19</sup>, -SO<sub>2</sub>NR<sup>20</sup>R<sup>21</sup>, -NR<sup>22</sup>CONR<sup>23</sup>R<sup>24</sup>, -NR<sup>25</sup>CO<sub>2</sub>R<sup>26</sup>, -COR<sup>27</sup>, -NR<sup>28</sup>COR<sup>29</sup>, or -NR<sup>30</sup>SO<sub>2</sub>R<sup>31</sup>; and R<sup>11</sup>, R<sup>12</sup>, R<sup>13</sup>, R<sup>14</sup>, R<sup>15</sup>, R<sup>16</sup>, R<sup>17</sup>, R<sup>18</sup>, R<sup>19</sup>, R<sup>20</sup>, R<sup>21</sup>, R<sup>22</sup>, R<sup>23</sup>, R<sup>24</sup>, R<sup>25</sup>, R<sup>26</sup>, R<sup>27</sup>, R<sup>28</sup>, R<sup>29</sup>, R<sup>30</sup> and R<sup>31</sup> each independently represents a hydrogen atom, an aliphatic group, or an aromatic group;

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**Marked-up claims 1, 6, 9, 10, 13, 17 and 20**

$R^2$ ,  $R^3$ ,  $R^6$  and  $R^7$  each independently represents a hydrogen atom, a halogen atom, an aliphatic group, an aromatic group, a heterocyclic group, a cyano group,  $-OR^{51}$ ,  $-SR^{52}$ ,  $-CO_2R^{53}$ ,  $-OCOR^{54}$ ,  $-NR^{55}R^{56}$ ,  $-CONR^{57}R^{58}$ ,  $-SO_2R^{59}$ ,  $SO_2NR^{60}R^{61}$ ,  $-NR^{62}CONR^{63}R^{64}$ ,  $-NR^{65}CO_2R^{66}$ ,  $-COR^{67}$ ,  $-NR^{68}COR^{69}$  or  $-NR^{70}SO_2R^{71}$ ;  $R^{51}$ ,  $R^{52}$ ,  $R^{53}$ ,  $R^{54}$ ,  $R^{55}$ ,  $R^{56}$ ,  $R^{57}$ ,  $R^{58}$ ,  $R^{59}$ ,  $R^{60}$ ,  $R^{61}$ ,  $R^{62}$ ,  $R^{63}$ ,  $R^{64}$ ,  $R^{65}$ ,  $R^{66}$ ,  $R^{67}$ ,  $R^{68}$ ,  $R^{69}$ ,  $R^{70}$  and  $R^{71}$  each independently represents a hydrogen atom, an aliphatic group or an aromatic group;

$R^4$  and  $R^5$  each independently represents a hydrogen atom, an aliphatic group, an aromatic group or a heterocyclic ring; and

$R^8$  represents a hydrogen atom, an aliphatic group or an aromatic group, and

(b) using the ink for recording in an ink-jet printing device.